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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/790,257  | 03/02/2004  | Joost Sytsma         | 1857.2690000        | 9806             |
| 28393   | 7590        | 10/05/2005           | EXAMINER            |                  |
| STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.<br>1100 NEW YORK AVE., N.W.<br>WASHINGTON, DC 20005 |             |                      | NGUYEN, HUNG        |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2851                |                  |
| DATE MAILED: 10/05/2005   |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |   |                                      |  |
|------------------------------|---|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/790,257    | <b>Applicant(s)</b><br>SYTSMA ET AL. |  |
|                              | <b>Examiner</b><br>Hung Henry V. Nguyen | <b>Art Unit</b><br>2851              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/14/05;12/30/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5-8, 10-11, 14-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto (U.S.Pat. 6,051,842).

With respect to claim 1-2, Yamamoto (figure 7) discloses a lithographic projection apparatus comprising all features of the instant claims such as: a radiation system for providing a beam of radiation; a substrate table for holding a substrate (W3) and a plurality of patterning means formed on the patterning device (R3) for projecting a desired pattern onto a target portion of the substrate; a radiation distribution device (320) for distributing the radiation from the radiation system to the patterning means and a radiation distribution channels (see figure 7) and a radiation detection system (340) having a detector for measuring intensity of the radiation associated with each of the patterning means and wherein the radiation distribution device directs the radiation from the radiation system to a plurality of the radiation distribution channels and the radiation distribution channels provide the beams of radiation to the patterning means.

As to claims 5-7, Yamamoto teaches the radiation detection system having detectors (340a-340c) wherein each is associated with each of the patterning means formed on patterning

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device (R3) and wherein the radiation detection system detects radiation exiting the radiation distribution system/channel. (see figures 6 and 7).

As to claim 8, Yamamoto teaches the detection system detects radiation system between the patterning means (R3) and the projection system (130).

With respect to claims 10-11, Yamamoto teaches a compensation system (361-362, 323) for adjusting intensity of the radiation that is associated with at least one patterning means and that is projected by the projection system.

As to claims 14-15, Yamamoto further teaches the compensation system comprises a radiation attenuators (362a-362c) for attenuating the radiation that is associated with at least one patterning means and that is projected by the projection system.

Regarding claims 16-19, Yamamoto teaches a control system (350) that updates the compensation system with previously detected and stored radiation system intensity data when the radiation is projected onto a portion of the substrate.

With respect to claims 20-22, the claimed method is seen to be inherent teachings in existence of the above apparatus.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (U.S.Pat. 6,051,842) in view of Mori (U.S.Pat. 6,803,991).

With respect to claims 3-4, Yamamoto teaches a lithographic projection apparatus comprising substantially all of the limitations of the instant claims including a probe (a31) associated with the detector (340a). Yamamoto does not expressly disclose that the detector/or probe moves across a portion of the radiation associated with each of the patterning means. Mori teaches an exposure apparatus having an intensity sensor (14) mounted on a movable probe (13) and the probe (13) moves across a portion of the radiation beam for detecting the intensity of the radiation beam associated with a patterning device. In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Yamamoto and Mori to obtain the invention as specified in claims 3-4 of the present invention. It would have been obvious to a skilled artisan to move the intensity detectors of Yamamoto across a portion of the radiation associated with the patterning device as suggested by Mori for the purpose of detecting the intensity of the exposing light transmitted through the patterning device and thus a correct amount of the exposure light exposed onto the substrate can be greatly attained.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (U.S.Pat. 6,051,842) in view of Takahashi et al (U.S.Pat. 5,892,573).

With respect to claim 9, Yamamoto discloses a lithographic projection apparatus comprising substantially all of the limitations of the instant claim as discussed except for the detection system detects radiation exiting the projection system. However, this feature is well

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known per se. Takahashi et al teaches an exposure apparatus having a sensor (13) placed between the substrate and the projection system (10) for detecting the radiation exiting the projection system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Yamamoto as suggested by Takahashi et al to obtain the invention as specified in claim 9 of the instant invention. It would have been obvious to a skilled artisan to place the detection system of Yamamoto between the projection system and the substrate as taught by Takahashi in order to detect the radiation exiting the projection system. The purpose of doing so would have been to improve the accuracy of the exposure amount on the substrate and thus the quality of the images is greatly obtained.

6. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (U.S.Pat. 6,051,842) in view of either Van Der Mast (U.S.Pat. 6,930,757) or Sandstrom et al (US 2003/0081303 A1).

With respect to claims 12-13, Yamamoto discloses a lithographic projection apparatus comprising substantially all structures set forth in the instant claims as discussed. Yamamoto lacks to show the patterning device being a programmable mask having an array of individually controllable elements. A projection lithography system that eliminates the need for mask through the use of a programmable mask having an array of individually controllable elements as recited in the instant claims, is well known in the art. For example, Van Der Mast and Sandstrom teach a lithographic apparatuses having a mask with an array of individually controllable elements. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the patterning device having an array of individually

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controllable elements as taught by Van Der Mast or Sandstrom, into the exposure apparatus of Yamamoto for the purpose of generating any desired patterns without the need of changing different masks and thus improving the throughput of lithographic projection apparatus.

***Prior Art Made of Record***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Asaishi discloses an exposure apparatus having compensation system for controlling an amount of light exposed onto the substrate.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V. Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hvn  
9/30/05



**HENRY HUNG NGUYEN  
PRIMARY EXAMINER**